

USDA
NATURAL RESOURCES
CONSERVATION SERVICE

MARYLAND CONSERVATION
PRACTICE STANDARD

SEDIMENT BASIN

CODE 350
(Reported by No.)

DEFINITION

A basin constructed to collect and store debris or sediment.

PURPOSE

This practice may be applied for one or more of the following purposes:

1. To preserve the capacity of reservoirs, wetlands, ditches, canals, diversions, waterways, and streams;
2. To prevent undesirable deposition on bottom lands and developed areas;
3. To trap sediment originating from construction sites or other disturbed areas;
4. To reduce or abate pollution by providing basins for deposition and storage of silt, sand, gravel, stone, agricultural waste solids, and other detritus.

**CONDITIONS WHERE PRACTICE
APPLIES**

This practice applies where physical conditions or land ownership preclude treatment of a sediment source by the installation of erosion-control measures to keep soil and other material in place

or where a sediment basin offers the most practical solution to the problem.

CONSIDERATIONS

Large sediment basins may have an effect on the peak discharge rate from a watershed. Planners should consider this, and take steps to mitigate any potential negative effects this may have on riparian habitat downstream from the structure.

Visual aesthetics may be a concern, especially in urban or suburban areas. To address these concerns, the basin could be designed to blend with the surrounding topography, or plantings could be proposed to screen the view from surrounding homes or buildings.

The nesting success and survival rate of ground-nesting species will increase if mowing is delayed until after the nesting season.

Using native species for revegetation will increase habitat diversity.

CRITERIA

The capacity of the sediment basin shall equal the volume of sediment expected to be trapped at the site during the planned useful life of the basin or the improvements it is designed to protect. If it is determined that periodic removal of sediment will be practicable, the capacity may be proportionately reduced.

The design of dams, spillways, and drainage facilities shall be according to the Maryland conservation practice standard for Pond (Code 378), Grade Stabilization Structure (Code 410), or according to the requirements in TR-60, as appropriate for the class and kind of structure being considered.

Temporary basins (meaning they will be removed within approximately 1 year) having drainage areas of 5 acres or less and a total embankment height of 5 ft or less may be designed according to Maryland conservation practice

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

standard for Water and Sediment Control Basin (Code 638), with the exception that any type of outlet is acceptable that meets either the Pond standard (Code 378) or the Grade Stabilization Structure standard (Code 410).

Design structures to drain sediment pools if necessary for safety and vector control.

Design fencing and other safety measures as appropriate to protect the public from floodwater and soft sediment. Give due consideration to good visual resource management.

Vegetation

Use the Maryland conservation practice standard for Critical Area Planting (Code 342) to determine the appropriate grass species to be established based on site conditions and use. Do not use plants listed on the Maryland noxious weed list. Construction should be scheduled so that completion occurs during periods suitable for the establishment of vegetation.

Materials

Corrugated Metal Pipe and its appurtenances will be galvanized and fully bituminous coated and must meet the requirements of AASHTO Specification M-190 type with watertight coupling bands.

Aluminum Pipe and its appurtenances must meet the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges.

Aluminum Coated Steel Pipe and its appurtenances must meet the requirements of AASHTO Specification M-274-79I. Coupling bands must be composed of the same material as the pipe and be watertight.

Reinforced Concrete Pipe must meet the requirements of ASTM specification C-76. Joints must be watertight.

Plastic Pipe Materials – PVC pipe must be PVC 1120 or PVC 1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density

Polyethylene (HDPE) pipe, couplings and fittings must meet the requirements of AASHTO M294 Type S with watertight joints.

Rock - Gravel (aggregates) and rock riprap must meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Sections 901.01 and 901.02 respectively.

Geotextile – Geotextile may be woven or non-woven and must meet the requirements of Maryland Department of Transportation, State Highway Administration Standard specifications for Construction and Materials, Section 921.09, Class SE.

Concrete - Concrete must meet the minimum requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 902, Mix No. 3 (3,500 psi), Type IA cement. Other mixes may be used when design computations are completed.

SPECIFICATIONS

Plans and specifications for installing sediment basins shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Provisions for controlling erosion and reducing sediment loss will be included in the plans. Specify rates of seed, mulch, and fertilizer for permanent seeding and temporary seeding (if necessary). Specify the planting dates and method(s) of establishment.

Fill all dead furrows, ditches, or gullies prior to construction of the sediment basin or as part of construction. Remove fence rows, hedge rows, trees and other obstructions as necessary.

Dependent on the type of structure used, follow the appropriate specification requirements in Maryland conservation practice standards for Pond (Code 378), Grade Stabilization Structure (Code 410), or Water and Sediment Control Basin (Code 638).

When necessary and required in the plans, topsoil is to be stockpiled and spread over excavations and other areas to facilitate restoration of vegetation.

Carry out construction in such a manner as to minimize erosion, air, and water pollution.

OPERATION AND MAINTENANCE

Prepare an operation and maintenance plan for the operator. Operation and maintenance requirements include:

1. Inspect the embankment and outlet system (paying special attention to debris removal) and promptly repair any damages after each runoff event and minimally 2 times per year;
2. Specify the timetable for sediment removal;
3. Mow as needed and at times to minimally impact wildlife;
4. Lime, fertilizer, and seed as needed to maintain healthy vegetation;
5. Address any safety issues concerning the location of the structure.

SUPPORTING DATA AND DOCUMENTATION

Field Data and Survey Notes

The following is a list of the minimum data needed:

1. Plan view sketch;
2. Profile and cross-section of the embankment, land slope, profile of the outlet, and other pertinent data if needed;
3. Special control or field features that must be considered in the design.

Design Data

Record on appropriate engineering paper. For guidance on the preparation of engineering plans see chapter 5 of the EFH, Part 650. The following is a list of the minimum required design data:

1. Locate practice on farm plan map in the case file;
2. Determine soil type, and any special restrictions. Provide soil loss calculations;
3. Design computations using the appropriate Engineering Field Handbook Chapter, Part 650 or by other approved method;
4. Show job class on design;
5. Design notes or design sheet must show cuts and fills, riser or principle spillway location and outlet, required cross section, channel grades, embankment elevation or grade rod, utility notification, construction notes, and other pertinent information;
6. Estimated quantities;
7. Details of outlet protection or other structural components needed;
8. Vegetative requirements. This must meet the criteria, specifications, and documentation requirements of the Maryland conservation practice standard for Critical Area Planting, Code 342;

9. Written Operation and Maintenance plan.

Construction Check Data/As-Built

Record on survey notepaper, SCS-ENG-28, or other appropriate engineering paper. Survey data will be plotted on plans in red. The following is a list of minimum data needed for As-builts:

Documentation of site visits on CPA-6. Include the date, who performed the inspection, specifics as to what was inspected, all alternatives discussed, and decisions made and by whom;

1. Record check notes during or after completion of construction showing grades and cross section of constructed components and outlets including length, width and depth;
2. Statement on seeding;
3. Final quantities and documentation for quantity changes, and materials certification;
4. Sign and date check notes and plans by someone with appropriate approval authority. Include statement that practice meets or exceeds plans and NRCS practice Standards.

REFERENCES

1. Maryland Department of Environment, 1994 *Maryland Standard and Specifications for Soil Erosion and Sediment Control*;
2. Maryland Department of Transportation, State Highway Administration, *Standard Specifications for Construction and Materials*, Baltimore, Maryland, January 2001;
3. USDA, Natural Resources Conservation Service, *Maryland Field Office Technical Guide, Section IV, Standards and Specifications*;
4. USDA Natural Resources Conservation Service, *National Engineering Handbook*, Part 650, various chapters;
5. USDA Natural Resources Conservation Service, *National Handbook of Conservation Practices*.